SIEMENS

MAMMOMAT 1000/3000

SP

Service

Modification Instructions

Extended Radiation Field

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Chapter	Page	Revision
1	1 - 1 General Documents required	02
3	3 - 1 General 3 - 2 Measuring procedure 3 - 3 Evalution	03

Page

1 Prerequisites 1 - 1

General . . . 1 - 1
Tools required . . . 1 - 1
Documents required . . . 1 - 1
Parts included . . . 1 - 1
Time required . . . 1 - 2

2 Exchange of Diaphragm Holder 2 - 1

Removal . . . 2 - 1
Installation of new diaphragm plate . . . 2 - 4

3 Checking the Radiation Field Limitation 3 - 1

General . . . 3 - 1
Measuring procedure . . . 3 - 2
Evaluation . . . 3 - 3
Alignment radiation field/light field . . . 3 - 3
Radiation field limitation . . . 3 - 3
Correction . . . 3 - 4
Final Procedure . . . 3 - 4

4 Modification of the magnification table 4 - 1

Page

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General

The upgrade of the diaphragm plates according to this instruction will result in the extended radiation field on the image receptor when used with the following Object table:

with Bucky 18x24 cm	64 31 600 X041E
with Bucky 24x30 cm	64 31 618 X041E
without grid 18x24 cm	64 31 626 X041E
without grid 24x30 cm	64 31 634 X041E

while:

Magnification table 1.5	62 78 555 X041E
Magnification table 1.8	62 78 548 X041E

have to be modified according to this instruction.

NOTICE **This modification will still leave the film markers partially visible even when not selected.**

Magnification table 1.5	64 83 742 X041E
Magnification table 1.8	64 83 759 X041E

are fully adapted for the extended radiation field.

Tools required

- Standard service tools
- Centering cross
- Film bag

Documents required

- Installation and Start-Up Instructions MAMMOMAT 3000 or MAMMOMAT 1000/3000

Parts included

The modification kit (64 83 551) includes the following parts:

Qty	Part	Part No.
1	Diaphragm plate assembly	64 83 569
5	Screw	60 26 439
1	Screw	60 23 402
2	Screw	60 26 264
4	Screw	60 23 444
10	Cable tie	62 21 753
10	Cable tie	90 11 370
1	Documentation (english)	65 27 290
1	Steel plate for magnification table	64 83 650

Spare items for covers:

Qty	Part	Part No.
2	Screw	92 15 914
12	Screw	61 87 897
10	Nut	60 34 706
2	Screw	60 23 428
2	Screw	63 38 649

Time required

Approximately 3 hours for 1 person.

Removal

1. System off.

2. Remove the tube head covers; left (1/Fig. 1), right (2/Fig. 1) and front (3/Fig. 1) side.

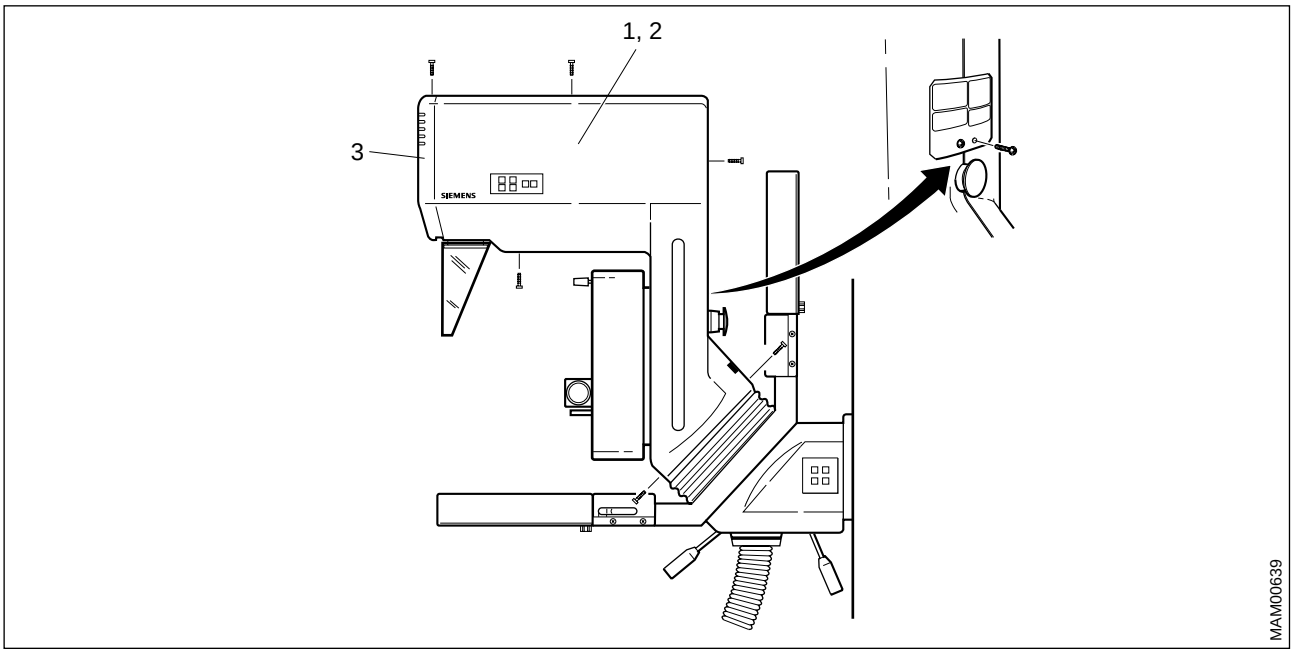

Fig. 1 Removal of tube head covers

3. Remove the collimator cover (1/Fig. 2) by unscrewing the four Allen screws (2/Fig. 2).

NOTICE	**Do not remove any other screws yet.**

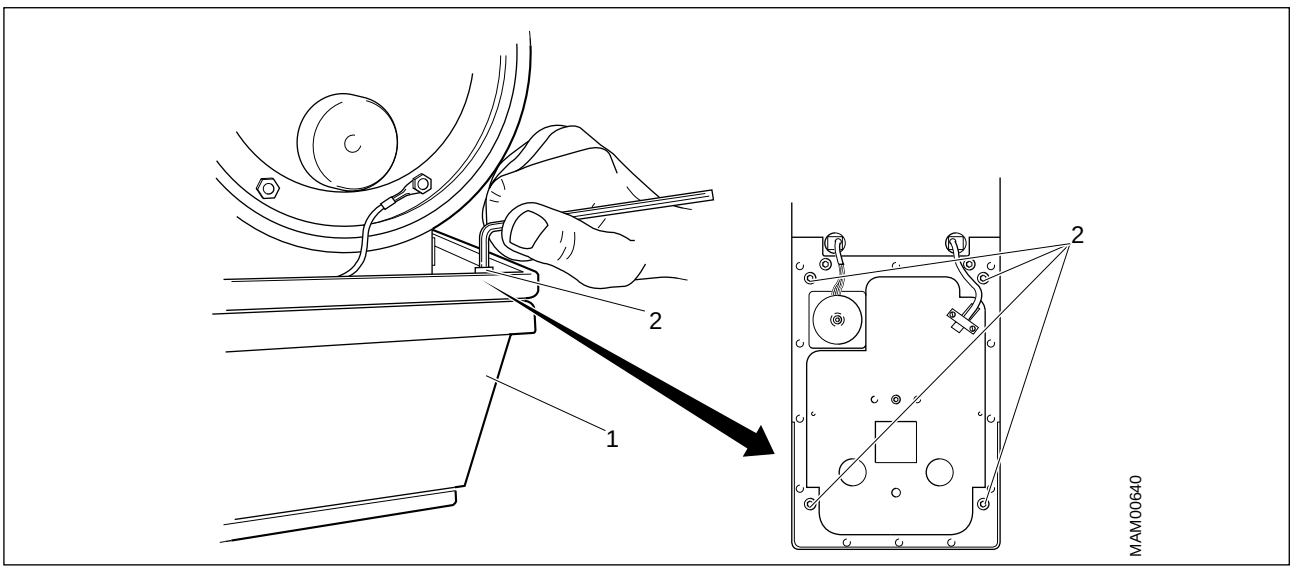

Fig. 2 Removal of collimator cover

4. Let the cover (1/Fig. 2) hang down from the diaphragm holder cable.

NOTICE	**Be careful not to damage the filters.**

NOTICE	**Before cutting any cable tie, mark the position to make reinstallation easier.** **Cable tie heads pointing in the wrong direction can prevent the motion of internal diaphragm near end position, caused by contact with the collimator protective cover.**

5. Cut and remove the cable tie (4/Fig. 3) holding the collimator lamp cable (3/Fig. 3).

6. Loosen the cable ties along cables from switches (6/Fig. 3), collimator lamp (3/Fig. 3) and electromagnet (7/Fig. 3).
   Disconnect switch cable (6/Fig. 3) at X853, collimator lamp cable (3/Fig. 3) at X894, motor M4 cable (3/Fig. 4) at X854 and switch cable (1/Fig. 4) at X852.
   Cable (2/Fig. 4) to electromagnet shall remain connected at X878.

7. Unhook the spring (5/Fig. 3) from the mirror (1/Fig. 3).

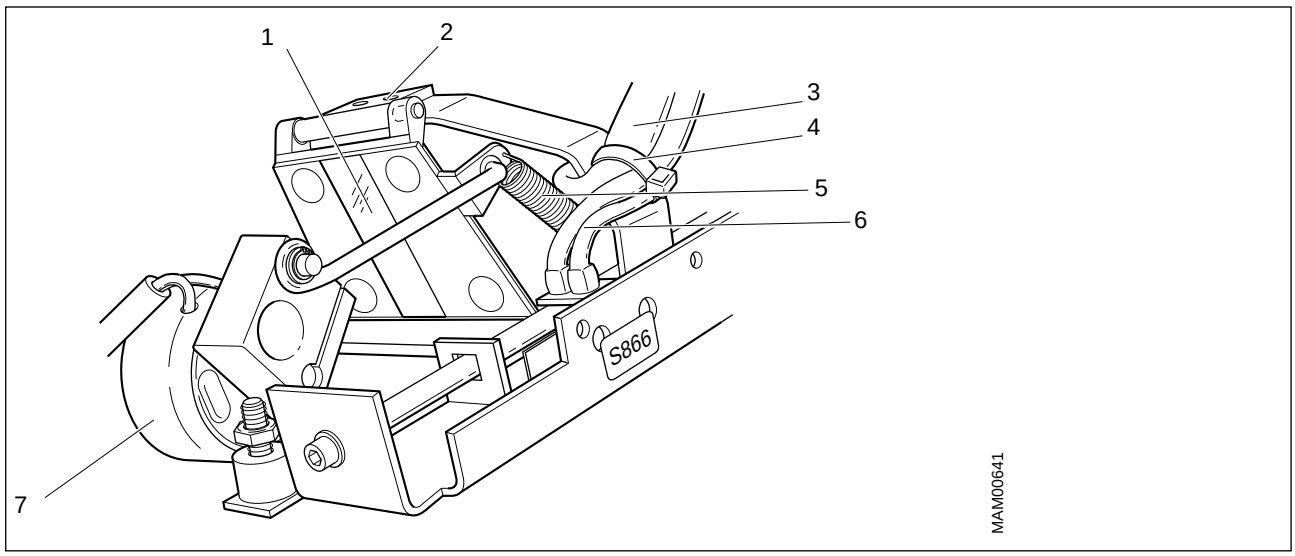

Fig. 3 Diaphragm, from right

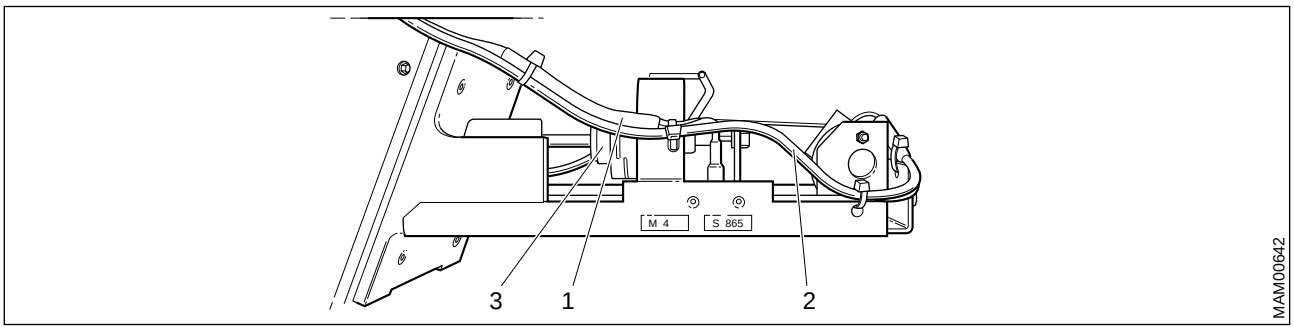

Fig. 4 Diaphragm, from left

8. Remove the four Allen screws (6/Fig. 5).
9. Remove the diaphragm plate (5/ Fig. 5).

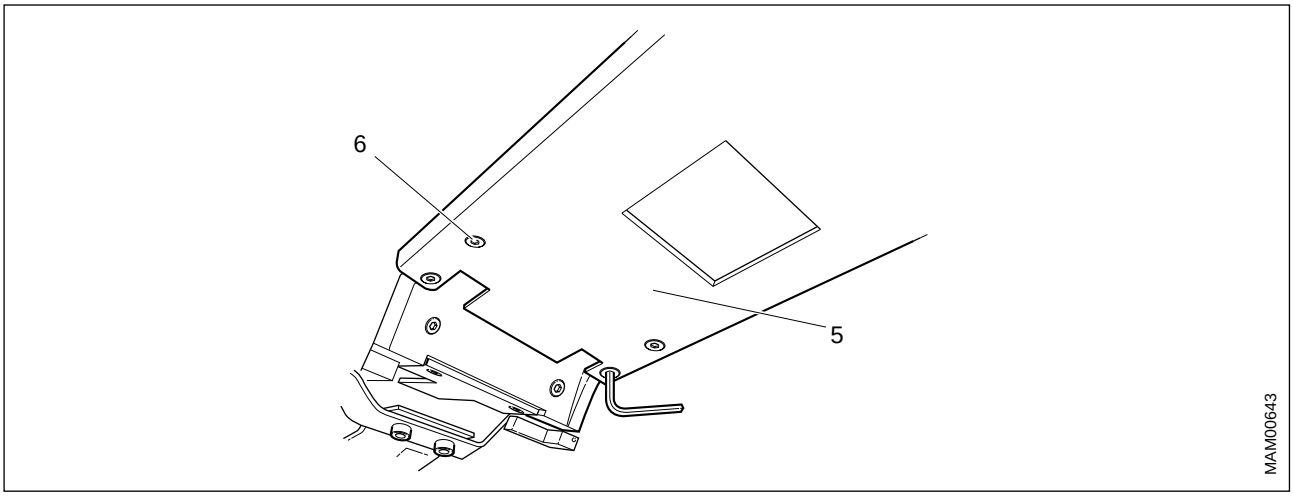

Fig. 5 Removal of diaphragm plate

10. Remove the electromagnet (1/Fig. 6) by unscrewing the two Allen screws (2/Fig. 6).

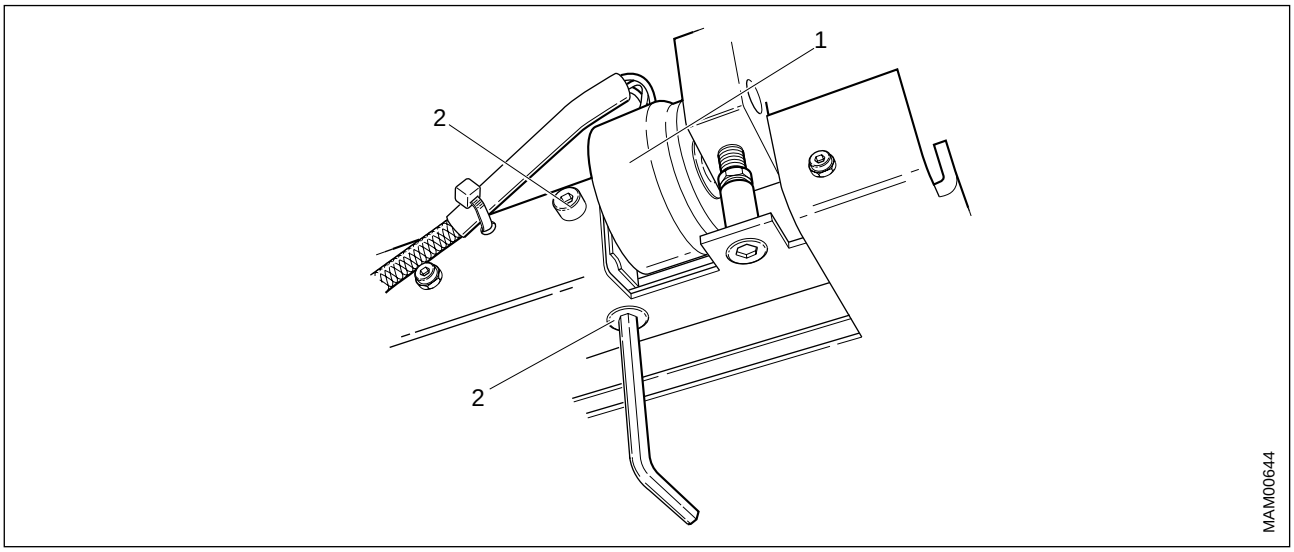

Fig. 6 Removal of electromagnet

NOTICE	**Be careful not to damage the mirror.**

11. Remove the mirror (1/Fig. 3) by unscrewing screws (2/Fig. 3).
12. Let the mirror hang down together with the electromagnet.

Installation of new diaphragm plate

NOTICE	**Be careful not to damage the filters.**

1. Install the mirror and electromagnet onto the new diaphragm plate assembly (64 83 569).
2. Lay cable X894 according to (3/Fig. 3).
3. Install the diaphragm plate using screws (60 26 439).
4. Connect the spring to the mirror.
5. Connect previously removed cables (X852, X853, X854 and X894).
6. Fit the cable ties (62 21 753, 90 11 370) in their original position.
7. System on.
8. Select all anode/filter combinations and check that none of the cables are excessively stretched and that there is sufficient space between the cables and the filter wheel.

General

The nominal width of the radiation field is 248 mm (18 x 24 mode) and 308 mm (24 x 30 mode). The nominal depth of the radiation field is 191 mm (18 x 24 mode) and 243 mm (24 x 30 mode), adjusted so that there will be no white edge on the film.

- On the chest wall side, the radiation field must extend beyond the film edge but not more than 9 mm. That applies for both the 18 x 24 and the 24 x30 mode.
- On the sides, the radiation field must not extend outside the object table and not extend more than 13 mm outside the film.
- On the nipple side, the radiation field must not extend beyond the film edge by more than 13 mm.

The light field must coincide with the radiation field within the following tolerances:

Left edge: +/- 6.5 mm

Right edge: +/- 6.5 mm

Back edge: +/- 6.5 mm

Front edge: +/- 6.5 mm

Measuring procedure

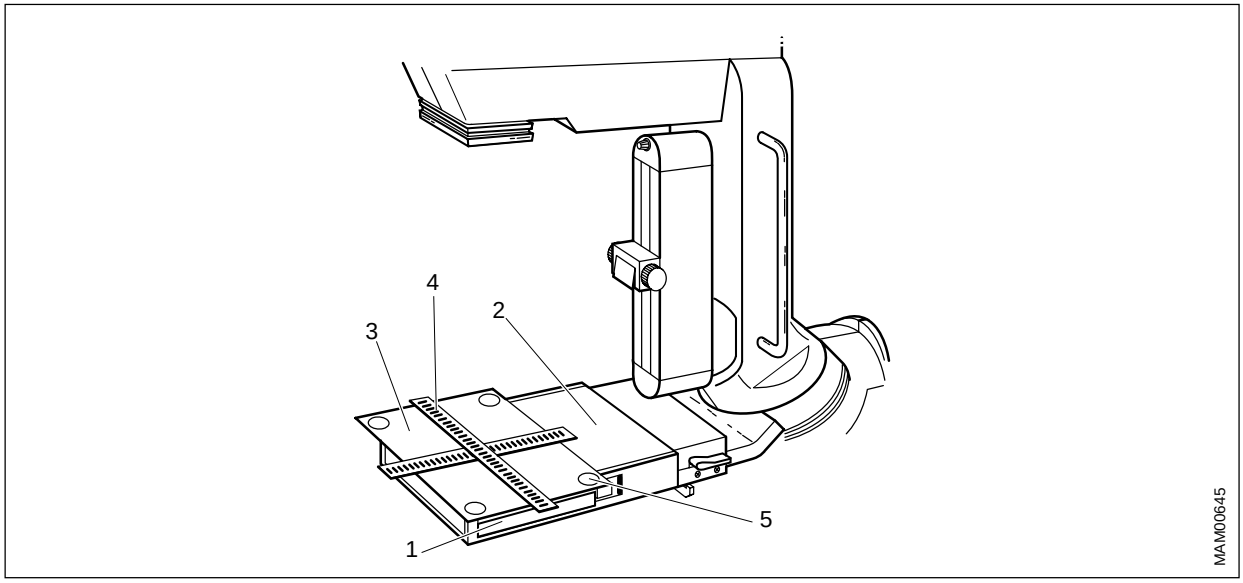

Fig. 1 Checking the radiation field

1. Put film into the cassette (1/Fig. 1). The film shall be centered in the cassette.
2. Insert the cassette into the object table (2/Fig. 1).
3. Place film bag (3/Fig. 1) on the object table. The film bag must extend beyond the chest-wall edge by minimum 10 mm.
   If no corresponding film bag is available, you can place two film cassettes side by side on the object table.
4. Place a centering cross (4/Fig. 1) on the film bag or cassettes.
5. Switch on the light field and mark the edges of the light field with four coins (5/Fig. 1).
6. Write down the values of the centering cross corresponding to the side edges and the front edge of object table.
7. Release exposure (Mo/Mo).
8. Develop exposed films.

Evaluation

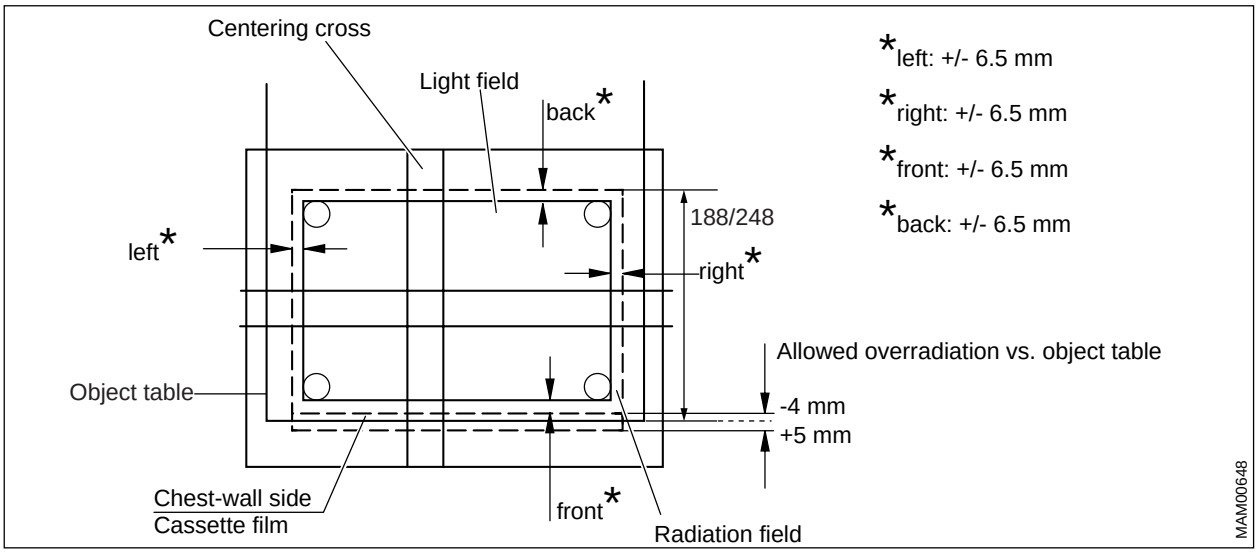

Fig. 2 Field limitation

NOTICE	**Values for evaluation are defined in the plane of the film bag.**

Alignment radiation field/light field

1. On the film that was placed in the film bag, mark the light field limit with guidance of the coin marks as shown in (Fig. 2) above.
   The maximum divergence between the radiation field and the light field of 6.5 mm must not be exceeded on any side.

Radiation field limitation

1. Measured from the chest wall side of the object table, the radiation field must be within -4 and +5 on the chest wall side and must not exceed 188 mm (18 x 24 film) and 248 mm (24 x 30 film) on the nipple side.
2. The radiation field must under no circumstances extend beyond the side edges of the object table. The margins to the edges must at least be 7 mm. Compare the side values read off on the film bag with the corresponding values written down in point 6 above.

Correction, see below.

3. Finally check the radiation field on a film exposed inside the object table.
   18 x 24 film must be completely exposed on all sides
   24 x 30 film might have up to 3 mm white edge on the nipple side[1]. The other sides must be completely exposed.

Repeat this check with all object tables and both “wings” (base plates).

1. adjust within the given tolerance in point 1 above if necessary

Correction

The light field is adjusted sideways with screw (1/Fig. 3) and forwards/backwards with screw (2/Fig. 3).

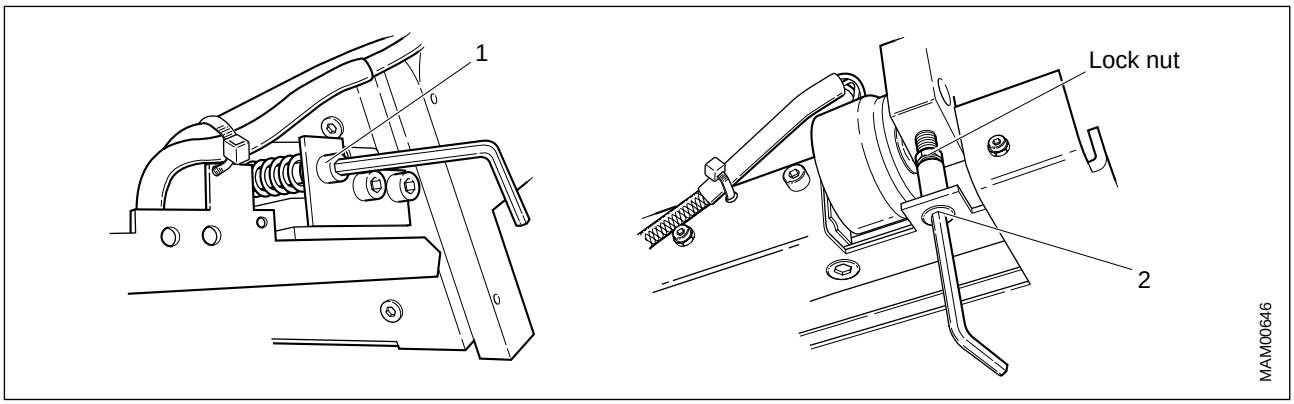

Fig. 3 Adjustment of light field

The radiation field is adjusted according to the following procedure:

1. Loosen the screws (2, 3/Fig. 4) that hold the collimator.
2. Adjust the radiation field in chest wall/stand wall direction (longitudinal adjustment) manually by moving the collimator.
3. For lateral adjustment, see Speed Info RX 168-95 (modification kit 63 82 886).

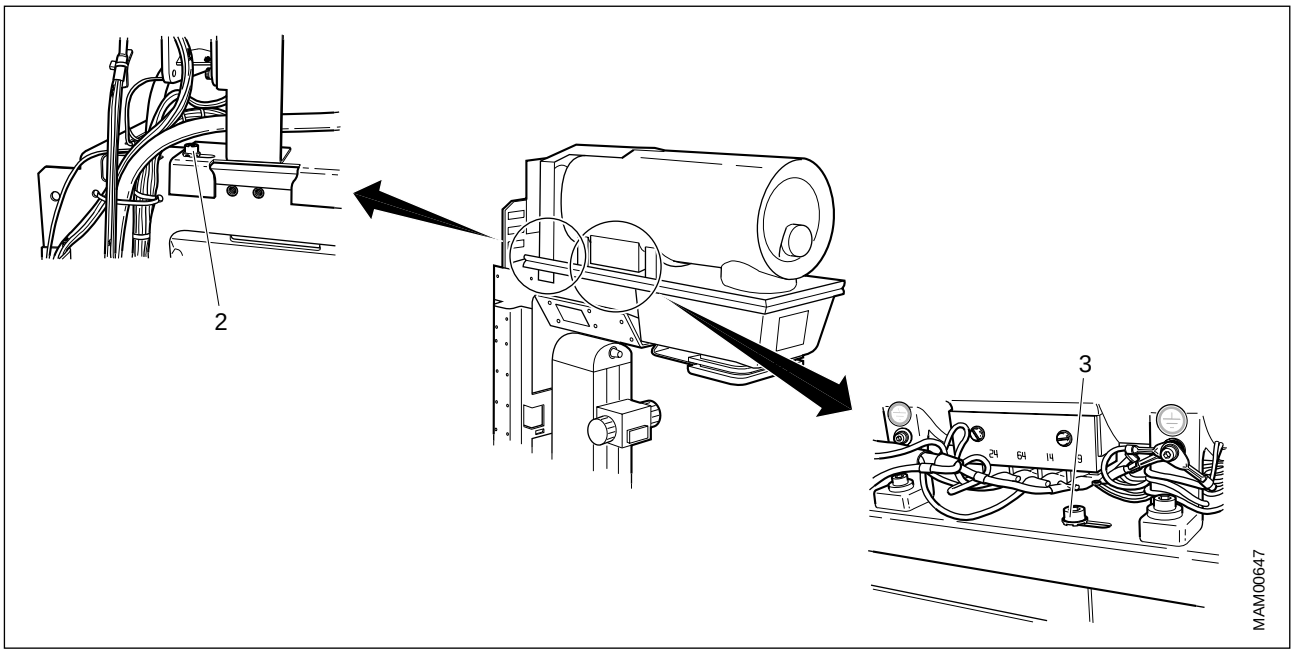

Fig. 4 Adjustment of radiation field

Final Procedure

1. Install the collimator covers.
2. Install the tube head covers.

- To be able to use the magnification mode, the magnification tables (Fig. 1) must be modified too.
- The modification kit includes one modified steel plate with the cassette holder (64 83 650) for reinstallation.
- When the present cassette holder is replaced by the new one, by simply unscrewing the table, the table can be used with the new diaphragm plate.

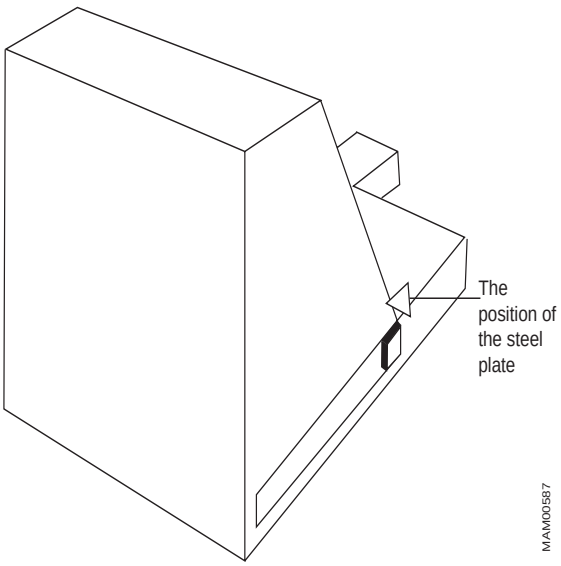

Fig. 1

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